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the Isthmus of Panama, Port Royal in Jamaica, and on the voyage to New York. One by Dr. J. K. Townsend, describing a new species of American wolf, Lupus gigas, Townsend, of North America, published in Journal.

It may not be improper, while enumerating the communications, to direct attention to a letter from Dr. Joel Y. Shelly, accompanying fossil remains of a supposed saurian found in Upper Milford, Lehigh county, Pennsylvania. Although not personally acquainted with this locality, it is believed to belong to a formation anterior to the coal, and it may be coeval with the period of the fossil foot prints in red sandstone described by Dr. A. T. King in Proceedings for December 1844, and December, 1845. If this supposition be correct these are probably very old and interesting remains of vertebrate animals and are therefore deserving of attention.

It seems improper to close a notice of the records, without briefly adverting to the very large portion of them occupied by mere lists of the munificent donations received throughout the year. The constant liberality with which so many of the wants of the Academy are supplied, must be a rich source of gratitude in the hearts of all its friends, and while an exquisite and high toned delicacy on the part of a distinguished benefactor forbids me to breathe his name, his generous gifts are appreciated among our richest treasures. All which is respectfully submitted by

Samuel Powel,
Philadelphia, January 28th, 1851. Recording Secretary.

ELECTION OF MEMBERS.

John Jordan, Jr., Esq., and B. Howard Rand, M. D., of Philadelphia, were elected *Members* of the Academy.

Election of Standing Committees for 1851.

The following committees on the various departments of Science, &c., were elected to serve for the year 1851.

Ethnology, S. G. Morton, J. S. Phillips, J. C. Fisher; *Comparative Anatomy and General Zoology*, Joseph Leidy, E. Hallowell, B. H. Coates; *Mammalogy*, S. G. Morton, S. W. Woodhouse, R. Kilvington; *Ornithology*, E. Harris, John Cassin, J. K. Townsend; *Herpetology and Ichthyology*, E. Hallowell, John Cassin, W. Keller; *Conchology*, T. A. Conrad, T. B. Wilson, H. C. Lea; *Entomology and Crustacea*, S. S. Haldeman, R. Bridges, W. S. Zantzinger; *Botany*, R. Bridges, W. S. Zantzinger, Gavin Watson; *Palæontology*, T. A. Conrad, T. B. Wilson, Joseph Leidy; *Geology*, R. C. Taylor, T. F. Moss, Samuel Powel; *Mineralogy*, J. Price Wetherill, S. Ashmead, W. S. Vaux; *Physics*, J. S. Phillips, J. C. Fisher, Thos. Fisher; *Library*, R. Bridges, T. B. Wilson, J. Lambert; *Proceedings*, S. G. Morton, W. S. Zantzinger, Joseph Leidy.

February 4th.

Dr. Morton, President, in the Chair.

A letter was read from Prof. C. U. Shepard, dated Charleston, S. C., January 20, 1851, presenting his thanks for the fragment of the

New Jersey Meteorolite, and enclosing in return a portion of the Cabarras Meteorolite; and also stating his intention to make further donations of other meteorolites at an early period. From an examination of the specimen sent him, he had thus far obtained the following results. Sp. gr. 3.25: it also abounds with nickeliferous iron, together with magnetic iron pyrites, while the greyish-white earthy matter appears to be Howardite. ($\dot{\mathrm{Fe}}\,\ddot{\mathrm{Si}} + \dot{\mathrm{Mg}}\,\ddot{\mathrm{Si}}$.)

A letter was read from the Scandinavian Scientific Association (without date,) accompanying the donation of a copy of its Proceedings during the last meeting at Copenhagen.

A letter was read from H. B. Dewey, Esq., dated Para, Brazil, Dec. 28, 1850, tendering his thanks for his election as a Corresponding member of the Academy, and expressing his desire to still further promote the objects of the Institution.

A communication addressed by Peter A. Browne, Esq., to Dr. Morton was read, briefly enumerating the discoveries he had made by means of the microscope, micrometer, and trichometer,* in regard to *pile*, by which term he meant to include both hair and wool, as follows:

1st. I have found the hair of the head of man of three principal shapes, viz.: 1. The cylindrical; 2. The oval; and 3. The eccentrically elliptical.

Of the 1st I have noticed the ancient hairs from Peru, Mexico, Brazil, &c., those of our present Indians and the Chinese. Of the second, the hairs of the English, French, Hungarians, Germans and Americans, &c., &c. And of the third the wool of the Bushman and African negro.

2d. The pile of the 1st and second class comes out of the epidermis at an acute angle, that of the third at a right angle.

3d. The pile of the 1st class is straight and lank, that of the 2d is flowing or curling, and that of the 3rd is crisp or frizzled, and sometimes spirally curled.

4th. The pile of the 2d class has its coloring matter in a central canal, but I have never been able to detect any central canal in either of the other classes; their coloring matter appears to me to be disseminated in the cortex and intermediate fibres.

5th. The cortex of the pile of all three classes is squamose; but the scales on the 1st and 2d classes are less numerous, are rounded at the anterior extremity, and adhere closely to the shaft; but those of the 3d class are more numerous, pointed, and not so closely set to the shaft.

6th. That there are two distinct species of sheep, as determined by their pile, viz.—the hairy sheep, and the woolly sheep. The pile of the hairy sheep will not felt nor full; the wool of the woolly sheep will do both.

7th. Upon the heads of the hybrids formed by the crossing of any two of the species of man above mentioned, are found separate filaments belonging to their two classes respectively; and upon the head of a double hybrid,† which I examined, I found filaments belonging respectively to all three classes.

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*An instrument invented by Mr. Brown for determining the ductility, elasticity, and tenacity of filaments.

† One who had the blood of all three classes.

9th. All hair is not polaric.

10th. There are various degrees of the felting property in wool, which may be determined by the aid of the microscope, as they depend upon the number, shape and adherence of the scales.

11th. The *softness* of any woolly fabric, is in exact proportion to the *ductility and elasticity* of the filaments of which it is composed; and the ductility and elasticity of the fibre can be accurately determined by the trichometer.

12th. The method in common use of determining the diameter of any filament that is not cylindrical is inaccurate, for every filament that is not cylindrical has *two* diameters, which cannot be accurately determined, except by using *transverse* sections.

13th. That in all cases of doubt or difficulty, whether a filament is or is not a true hair, it can be determined with the trichometer.

14th. The *button* of the pile of the head of man changes its shape and color in diseases of the hair, and in diseases of the skin that affect the hair.

15th. The *buttons* of the pile of the head of lunatics differ from those of the sane.

16th. There is no difference between the wool found upon the head of a pure negro, and that found upon the back of a woolly sheep, except in the *degree* of the felting power possessed by them.

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Dr. Morton, in remarking upon the cranium of the Dijak deposited by him this evening, referred to the great difficulty in obtaining these crania, and stated that Mr. Wm. Gliddon, from whom he had derived the present specimen, had been unable, during many years residence in Borneo, to induce the natives to part with any of their trophy skulls upon any consideration. This had been carried off by a Dutch officer on a warlike expedition.

Dr. Morton announced the decease of Mr. John J. Audubon, a member of this Society; and after some appropriate observations upon the life and character of this distinguished zoologist, moved the following Resolutions, which were unanimously adopted:—

Resolved, That this Society has heard with profound regret of the death of their esteemed and venerable colleague, John James Audubon, at his residence near the city of New York, on the 27th ultimo.

Resolved, That by the demise of this truly great man, Science has lost one of her most zealous and gifted disciples, and the Arts, a master in the branch which he cultivated.

Resolved, That we recognize in Mr. Audubon a man who has happily lived to fulfil his destiny as an explorer of the great field of American Zoology, while the splendid volumes which are the fruit of his labors, will diffuse the knowledge and the love of science to the latest generations.

Resolved, That a copy of these Resolutions, signed by the officers, together with the sympathy of the members of this Society, be respectfully tendered to the family of Mr. Audubon.

On leave granted, the Committee, to whom was referred the paper

of Dr. Woodhouse, read January 7th, 1851, describing a new species of Jackal, presented a report, recommending the same for publication in the Proceedings and Journal, with some additional remarks on the subject by the Chairman, Dr. J. C. Fisher, which was adopted.

The North American Jackal—CANIS FRUSTROR.

By S. W. WOODHOUSE, M. D.

Char. Essent.—Hair cinereous grey, varied with black above. Longer on the vertebral line, legs fulvous.

Dimensions.—Total length from the tip of the nose including the tail, with the exception of the hair at the tip, two feet seven inches; trunk of the tail eight and three-tenths inches; total length of ears four and three-tenths inches; length of fore leg nine inches; from the anterior canthus of the eye to the tip of the nose two and seven-tenths inches; from the anterior angle of ear to posterior canthus of the eye two and four-tenths inches; between the anterior angles of the ears two and five-tenths inches.

Description.—Hair at base fulvous and woolly, middle of its length white and tipped with black; ears erect, pointed at tip, cinnamon color behind and at the base; inside dirty white, sides paler than the back, belly brownish white, breast brown, chin white, legs cinnamon color; the nose from the eyes to the tip cinnamon color. Cheeks grey; space between the ears reddish brown; tail fulvous below, dark grey above, black at tip, slightly bushy; iris light brown, lips white tipped with black; it has three series of setæ on the upper lip, above the eyes, and on the sides of the cheeks.

The most remarkable difference exists in the skull of this animal, which more closely resembles the Jackal of the Old World than any known species of wolf. But as Dr. Morton is now engaged on a memoir in which the cranial characteristics of the American wolves will be compared with those of the *Canis lupus* of Europe, I leave this part of the subject in his hands.

Habits.—This animal I first saw at Fort Gibson, on the Neosho river. They frequent this place at night in numbers, making their way to a ditch where the offals of the garrison are thrown. Their bark is sharp like that of a terrier, followed in quick succession, then a prolonged cry much like that of the hound.

Four or five of them make as much noise as twice their number of terrier dogs, so that a stranger on hearing them is apt to be deceived as to their number. I have seen them on all parts of the prairie, but they appear to be more abundant near the settlements.

They prowled frequently about our camp at night, keeping up an incessant barking.

I procured a male and female; these I regret to say have not lost their milk teeth, but they have attained their full growth, as I have seen numbers of them.

On showing them to Dr. Townsend, he recognized them immediately, and said that he had seen them frequently on the plains of the Missouri, but never beyond the mountains.

This animal has hitherto been confounded with the *Canis latrans* of Say.

Observations by the Committee.

The Committee are much gratified with this paper, as it assists in throwing

light upon a point in the Natural History of the wolves of North America, which has heretofore been involved in obscurity. Before the description of the Lupus Gigas of North America, by Dr. Townsend, all the varieties of wolves in this country were referred by naturalists to two species, the Lupus occidentalis or common wolf, and the Lupus latrans, or prairie wolf. Sir John Richardson was the first who unequivocally described the wolves of North America, as distinct from the European or Pyrenean wolf. The great majority of naturalists who have noticed the wolves of this continent, including Grey, Agassiz, De Kay, &c., agree with him in considering them as entirely distinct species from the wolves of the Eastern Continent.* With the exception of the "large brown wolf," of Lewis and Clarke, they all refer the American wolves of every variety to the two species named Lupus occidentalis, and Lupus latrans. It was scarcely possible to reconcile the various descriptions of the different wolves classed under the last of these, Lupus latrans, as belonging to the same animal. The Lupus latrans of Say, found on the *Upper* Missouri and the Saskechawan, is classed by Richardson† with the Californian *Ochropus*, and the Mexican *nigrirostis*, (known also as the Coyote.) He has given a figure of the Lupus latrans, which agrees exactly with a specimen in the possession of the Academy.

The figure given by Audubon in his Quadrupeds of North America, Plate 71st, does *not* agree with Richardson's, or with the specimen above referred to, but *does* agree very closely with the Canis frustror, in color, shape, &c. It is an excellent drawing of the last mentioned animal. The Coyote of Mexico and California, has been, we believe, uniformly referred by naturalists to the Lupus latrans, and the drawing of Audubon appears to have been made from it, considered as an undoubted Prairie wolf. The figure of the Hare Indian dog of Richardson, the Canis familiaris lagopus, bears a very striking resemblance to the Lupus latrans of Audubon, and the Canis frustror of Woodhouse. We are inclined from the figure, measurements, and description of the voice, to consider this dog as the analogue among our domestic animals of the Canis frustror or Coyote, if it be not the same animal merely domesticated. From the Canis frustror hunting so uniformly in packs of considerable numbers, as well as its size, it is more nearly allied to the Jackal than the wolf. It is decidedly gregarious in its habits. We hope that the Academy will soon possess good specimens of all the wolves of this continent, so that a more strict comparison may be made, and this question of species be definitely settled. At present we may consider the following species as clearly established, viz : Lupus gigas, Lupus occidentalis, Lupus latrans, and Canis frustror.

On leave granted Mr. Vaux, as Treasurer of the Publication Committee, presented the Annual Report, which was adopted.

February 11th.

Dr. MORTON, President, in the Chair.

A letter was read from Dr. N. S. Jarvis, addressed to Dr. Morton, dated Ft. Brown, Texas, Jan. 10, 1851, in answer to some enquiries by

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* Report of the British Association for 1836.

† Fauna Boreali Americana.